

Al karma language school

Mathematics

Primary 5 – First Term

2017-2018



Name: ……………………………………………………………

Class: 5 " ……… "





Unit one: Fractions

Lesson one: Approximating to the nearest hundredths and thousands

Example 1:

5.972 ≃ 5.97 to the nearest hundredth.

When we approximate to the nearest hundredth, we look at the thousandth digit (the third digit after the decimal). If it less than (5), just cancel the thousandth digit and leave the hundredth digit without change.

Example 2:

3.968 ≃ 3.97 to the nearest hundredth.

When we approximate to the nearest hundredth, we look at the thousandth digit (the third digit after the decimal).if it (5) or more cancel the thousandth digit and add one to the hundredth.

1- Approximate to the nearest hundredths:



a- 6.809 ≃ ……………………………………

b- 901.234 ≃ ……………………………………

c- 39.655 ≃ ……………………………………

d- 16.720 ≃ ……………………………………

e- 200.267 ≃ ……………………………………

f- 43.812 ≃ ……………………………………

g- $24\ \frac{3}{1000}$ ≃ ……………………………………

h- $64\ \frac{2}{250}$ ≃ ……………………………………

i- $51\ \frac{7}{500}$ ≃ ……………………………………

j- $85\ \frac{1}{200}$ ≃ ……………………………………

Note that: *we will apply the same rule for approximation to the nearest thousandth.*

Example: *approximate 6 $\frac{321}{5000}$ to the nearest thousandth.*

Ans. *First we change the number to decimal form then approximate.*

$6\frac{321}{5000} = 6\frac{321 \times 2}{5000 \times 2} = 6\frac{642}{10000} = 6.0642 \simeq 6.064$

1- Approximate each of the following numbers to the nearest thousandth:

a- 2.2964 ≃ ……………………………………………

b- 66.5885 ≃ ……………………………………………

c- 315.5478 ≃ ……………………………………………

d- 490.0021 ≃ ……………………………………………

e- 166.2062 ≃ ……………………………………………

f- 87.4310 ≃ ……………………………………………

g- 12 $\frac{7}{5000}$ ≃ ……………………………………………

h- 52 $\frac{27}{10000}$ ≃ ……………………………………………

i- 35 $\frac{18}{100}$ ≃ ……………………………………………

j- 934 $\frac{7}{10}$ ≃ ……………………………………………

2- Find the result, then approximate to the nearest thousandth:

a- 35.621 + 5.0546 = …………………… ≃ ……………………

b- 18 $\frac{3}{4}$ + 83.0621 = …………………… ≃ ……………………

c- 62$\frac{1}{2}$ - 16.052 = …………………… ≃ ……………………

d- 29 – 16.2501 = …………………… ≃ ……………………

3- Complete:

a- The number 321.281 ≃ 321.2 to the nearest ……………………

b- The number 1.0748 ≃ 1.074 to the nearest ……………………



Lesson 2: comparing fractions

Remember that:

- **If the fractions we compare have the same denominator, then the fraction that has the greatest numerator is the greatest fraction. But if the fractions have the same numerator, then the one with the smallest denominator is the greatest fraction.**

First: with same denominator:

$\frac{2}{5} < \frac{4}{5}$, $\frac{3}{8} > \frac{1}{8}$ **"The fraction with greater numerator is the greater one"**

Second: with same numerator:

$\frac{2}{3} > \frac{2}{5}$, $\frac{9}{7} < \frac{9}{4}$ **"The fraction with smaller denominator is the greater one"**

- To compare fractions of different denominator, we must let them have the same denominator before comparing; this could be happen by using L.C.M. (lowest common multiple).

Example: which fraction is greater : $\frac{2}{5}$ or $\frac{3}{4}$

First let the two fractions have the same denominator.

$\frac{2x4}{5x4} = \frac{8}{20}$

$\frac{3x5}{4x5} = \frac{15}{20}$

Now both fractions became $\frac{8}{20}$, $\frac{15}{20}$ (with same denominator).



We can compare them, as $\frac{15}{20}$ is the greater.

Example: Arrange in an ascending order:

$\frac{2}{5}$, $\frac{3}{4}$, $\frac{3}{10}$

Before arrange we have to make the 3 fractions with same denominator using L.C.M.



$\frac{2}{5} = \frac{8}{20}$, $\frac{3}{4} = \frac{15}{20}$, $\frac{3}{10} = \frac{6}{20}$

The new fractions are: $\frac{8}{20}$, $\frac{15}{20}$, $\frac{6}{20}$ now we arrange them in an **ascending** order:

$\frac{6}{20}$, $\frac{8}{20}$, $\frac{15}{20}$ which are: $\frac{3}{10}$, $\frac{2}{5}$, $\frac{15}{20}$

1- Put the suitable sign:

a) $\frac{7}{20}$ .... $\frac{3}{4}$

b) $1\frac{5}{7}$ .... $5\frac{2}{21}$

c) $2\frac{1}{28}$ .... $1\frac{3}{14}$

d) $6\frac{1}{18}$ .... $6\frac{1}{36}$

2- Arrange in an ascending order:

a) $\frac{1}{6}$, $\frac{5}{9}$, $\frac{7}{18}$

b) $3\frac{5}{8}$, $3\frac{3}{4}$, $3\frac{1}{12}$



The same done to compare a fraction with a decimal number :

Example: Compare $3\frac{5}{8}$, 3.6

First both fractions must be put in the same form either in fractional form or decimal form (choose the easiest): In this case it's easier to change ⅝ in a fractional form: ⅝ = 0.625

Now the two numbers are : 3.625 , 3.6

3.625 > 3.6 i.e $3\frac{5}{8}$ > 3.6

Exercise:

Compare **⅖ , .06**

Arrange in an ascending order:

4⅕ , 2.4, 4⅞ , 3



3- Arrange in a descending order:

a) $\frac{1}{2}$, $\frac{2}{3}$, $\frac{1}{4}$

b) $2\frac{5}{8}$, $4\frac{1}{2}$, $4\frac{3}{4}$

c) $\frac{36}{9}$, $2\frac{1}{3}$, $2\frac{3}{5}$





Lesson 3: Multiplication: Multiplying Fractions and decimal numbers by 10,100 and 1000

When we multiply decimals by 10 , 100 and 1000 . We move the decimal point to the right according to the number of zeroes.

Example 1:

6.75 x 10 = 67.5

6.75 x 100 = 675

6.75 x 1000 = 6750



Example 2:

0.03 x 10 = 0.3

0.03 x 100 = 3

0.03 x 1000 = 30

1- Complete:

a) 0.65 x 100 = ……………

b) 32.14 x 10 =………………

c) 13.51 x 1000 = ……………

d) 0.067 x 100 = ………………

e) 85.160 x 1000 = ……………

f) 5.83 x 100 = ………………



2- *Join each equal results:*

9.3 x 1000	9.30 x 10	0.93 x 10
0.93 x 10000	0.93 x 100	0.093 x 100

---

3) If the price of 1metre of a piece of cloth is 100 pounds each.

How much money did he pay?

4) Mariam runs 1.5 km every day in her summer holiday. How many km she will run in 10 days?



Lesson 4: Multiplying a fraction or a decimal number by an integer

Notice: $23.25 \times 15 = 23.25 \times (10 + 5)$

$= (23.25 \times 10) + (23.25 \times 5)$

$= 232.5 + 116.25 = 348.75$

Exercise: Find

1) $19.45 \times 18 =$

2) $28.36 \times 11 =$

3) $40.94 \times 15 =$



Lesson 5: Multiplying common fractions

In multiplying fractions , we multiply numerator of first by numerator of second. And denominator of first multiplies by denominator of second.

Examples:

a) $\frac{3}{4} \times \frac{3}{5} = \frac{9}{20}$

b) $\frac{2}{3} \times \frac{9}{4} = \frac{18}{12} = \frac{3}{2}$ (The simplest form) or: $\frac{\cancel{2}}{\cancel{3}_1} \times \frac{\cancel{9}}{\cancel{4}_2} = \frac{3}{2}$

c) $1\frac{4}{5} \times \frac{5}{3} = \frac{^3\cancel{9}}{\cancel{5}_1} \times \frac{\cancel{5}^1}{\cancel{3}_1} = 3$ **(First change mixed fraction to improper fraction).**

d) $2\frac{1}{3} \times 3\frac{2}{5} = \frac{7}{3} \times \frac{17}{5} = \frac{119}{15}$

1- Multiply then put the answer in the simplest form:

a) $\frac{5}{4} \times \frac{3}{2} =$ ………………

b) $\frac{9}{7} \times \frac{14}{3} =$ ………………

c) $\frac{5}{8} \times \frac{4}{15} =$ ………………

d) $\frac{7}{6} \times \frac{5}{3} =$ ………………

2- Find the missing fraction:

a) $\frac{7}{3} \times$ …………… $= \frac{14}{15}$

b) …………… $\times \frac{1}{2} = \frac{3}{10}$

c) $\frac{2}{5} \times$ …………… $= \frac{3}{4}$

d) …………… $\times \frac{14}{9} = \frac{2}{5}$



3-Multiply then, put the answer in the simplest form:

a) − x 12 = ...

b) 15 x − = ...

c) 35 x − = ...

d) 6 x − = ...

4-Multiply then, put the answer in the simplest form:

a) − x 1 − = ...

b) — x 2 − = ...

c) 3 − x − = ...

d) 7 − x − = ...

5- Multiply then, put the answer in the simplest form:

a) 1 − x 2 − = ...

b) 5 − x 2 — = ...

c) 4 − x 3 — = ...

d) 4 − x 6 − = ...



Word problems:

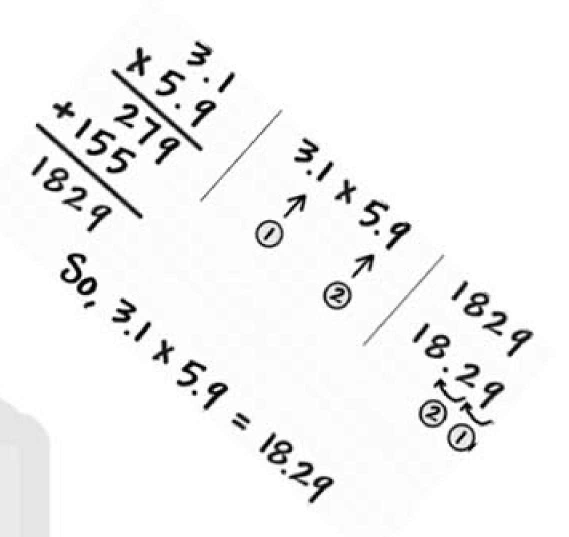
1- Sally decided to study – of the day, after a week find how many hours will she study?

2- A class of 35 students. – of them participated sports activity. Find number of students in sports activity.



Lesson 6: Multiplying decimal fractions

Example:



1.4 ⟵	***One decimal place***
X 2.3 ⟵	***One decimal place***
42	
+ 280	
3 . 2 2 ⟵	***Two decimal places***

1- Estimate to place the decimal point in the underlined numbers:

a- 2 1 1 × 9.6 = 20.256

b- 3.2 × 2 4 = 0.768

c- 44 × 1.25 = 5.500

d- 4.5 × 2 5 = 11.25

Note That:

0.4 x 0.6 = 0.24

1.5 x 2 = 3.0

3.0 = 3 , 5 = 5.00 and 25 = 25.0 and so on...

2- put the decimal point in its suitable place for the result:

a) 36.54 × 2.4 = 8 7 6 9 6

b) 0.23 × 9.64 = 2 2 1 7 2

c) 18 × 2.7 = 4 8 6

d) 3.04 × 22 = 6 6 8 8

3- Find the product:

a) 4.6 X 8.7

b) 5.4 × 3.2

c) 3.25 × 0.9



e) 64 × 0.004

f) 3.06 × 0.02

g) 0.07 × 0.5

5) A car consumes 6.62 litres of fuel each hour. How much fuel would be consumed in 7.3 hours?

6) Amir bought a piece of cloth of 3.75 metres long. If the price of one metre is 42.5 L.E. Calculate the price of the cloth. Approximate the result to the nearest pound.



Lesson 7: Dividing fractions

Example:

6 x − = 3 and 6 ÷ 2 = 3, so 6 x − = 6 ÷ 2

Divide:

$- \div \frac{2}{-} = \frac{3}{-} \times \frac{3}{-} = -$

When we divide two fractions, we change the operation to multiplication and get the reciprocal of the second fraction then multiply as in the previous lesson.

Reciprocal of a fraction:

− Its reciprocal is −

— Its reciprocal is —

− Its reciprocal is 6

5 Its reciprocal is −

1- Divide, then put the answer in the simplest form:

a) − ÷ − = ……………………………………………………………

b) − ÷ − = ……………………………………………………………

c) − ÷ − = ……………………………………………………………

d) − ÷ − = ……………………………………………………………



2- *Divide, then put the answer in the simplest form:*

a) − ÷ 2 = ……………………………………………………………

b) − ÷ − = ……………………………………………………………

c) − ÷ 4 = ……………………………………………………………

d) − ÷ 12 = ……………………………………………………………

3- *Divide, then put the answer in the simplest form:*

a) − ÷ 2 − = ……………………………………………………………

b) − ÷ 4 − = ……………………………………………………………

c) 3 − ÷ 6 = ……………………………………………………………

d) 5 − ÷ 7 = ………………………………………………



Lesson 8: Dividing fractions and decimal numbers by 10,100 and 1000

First: divide:

a- 631 ÷ 10 = ……………………

b- 54.39 ÷ 100 = ………………

c- 0.27 ÷ 100 = ………………….

d- 14.6 ÷ 1000 = ………………

e- 489.2 ÷ 1000 = …………………

f- 724.3 ÷ 1000 = …………………

g- 0.5 ÷ 10 = ……………

h- 52.1 ÷ 100 = …………

Second: put the suitable sign: (< , = , or >) :

a- 39.24 ÷ 10 ………… 3.924 ÷ 10

b- 6041 ÷ 1000 ………… 604.1 ÷ 10

c- 258.2 ÷ 100 …………… 258.2 ÷ 10

a- 8.951 × 100 …………… 89.51 × 100

b- 73.20 × 10 …………… 7.320 ÷ 10

c- 0.691 × 100 ………… 691 ÷ 100

Complete:

a) 0.785 × 100 = 7.8 × …………

b) 1.56 × 10 = 0.156 × …………

c) 1000 × 0.0932 = ……… × 0.932

d) 100 × 0.345 = 3.45 × ………

e) 0.09 × 10 = 0.009 × ………

Lesson 9: Dividing an integer by a 3-digit number without having a remainder

1- **Divide:**

a-1845 ÷ 123 =

b-4620 ÷ 220 =

c-33066 ÷ 501 =



2- ***A truck can carry 162 boxes. Find the number of trips needed to transport 19440 boxes.***

3- ***A man saves 337 L.E. each month. After how many years will be save 16176 L.E.***

4- ***<u>Find the quotient:</u>***

a) 3825 ÷ 225 =

b) 19968 ÷ 256 =

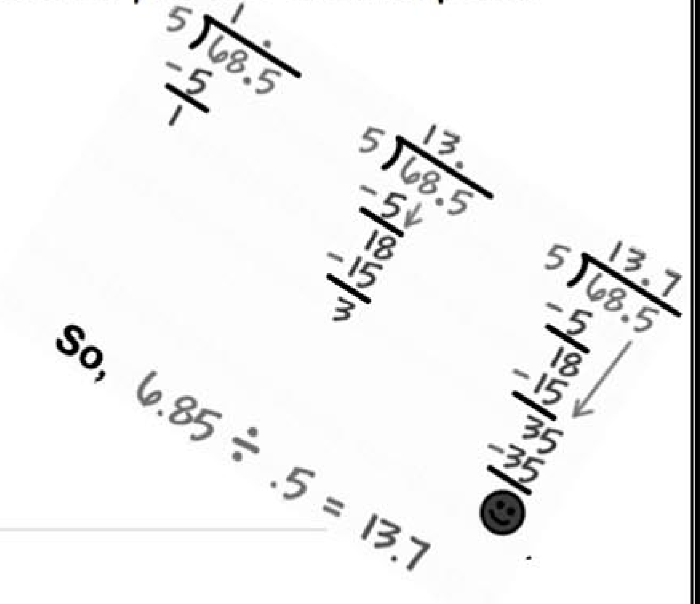
Lesson 10: Division by a decimal fraction and by a decimal number

First: Division by a decimal fraction without a remainder
Second: Division by a decimal number without a remainder

Example 1:

Divide: 3.2 ÷ 0.8
To do this division operation, the divisor which is (0.8) must be a whole number so, we are going to multiply 0.8 x 10 and we the same for the dividend so as not to make any change:
(3.2 x 10) ÷ (0.8 x 10) = 32 ÷ 8 = 4

Example 2:
Divide: 0.625 ÷ 0.25
Here we are going to multiply both dividend and divisor by 100 so,
(0.625 x 100 ÷ 0.25 x 100)
= 62.5 ÷ 25 then divide it as usual then put the decimal point.





Find the quotient:

a) 25.6 ÷ 1.6

b) 112.5 ÷ 11.25

c) 1.75 ÷ 0.5

d) 2.25 ÷ 0.15



Lesson 10: Third

Division which is carried out with a remainder doesn't finish so, we call it infinite division.

1) Find the result: (To the nearest hundredth)

a) 8 ÷ 34 =

b) 90 ÷ 55=

2) Find the result: (To the nearest thousandth)

38 ÷ 11=



Unit 2 " Sets"

Lesson 1 and 2: What is the set? and Mathematical expression of a set

Definitionof a set:

- A set is a well-defined collection of objects. Objects that included in the set are called elements. The elements of a set can be anything, numbers, people, letters and so on ……
- We express the set by putting its elements between braces like this **{}**, then place the mark "," between every two elements. We use capital letters to the set we have like set A, set B, set C and so on …

NOTES:

1) We don't repeat the element in writing the set.

Example: if A is a set of the letters of the word book we write it as A = {b, o, k}

2) The order of the elements is not important when writing a set.

3) The ordered pair (2,5)≠(5,2) but {2,5}={5,2}

- There are two methods to write a set: if "A" is a set of the elements 0 , 2 , 4 , 6 , 8 , 10. We can write it by two ways:

Listing method: A = { 0 , 2 , 4 , 6 , 8 , 10 }.



Description method:

A={x : x is one of the even numbers smaller than 11}.

1- which of the following is a Set and which is not a set:

a) The letters of the alphabet.

b) Tall men in Cairo.

c) The even numbers.

d) The odd numbers.

e) days of the week.

f) Letters of the word "pencil".

g) Football teams in Egypt.

2- by listing method, write each of the following sets:

a) Whole numbers between 20 and 30.

....

b) days of the week.

....

c) Letters of the word "television".

....

d) Even numbers between 3 and 15.

....

e) Digits of the number 9 858 767

....



f) Odd numbers between 4 and 16.

……………………………………………………………………………………………………

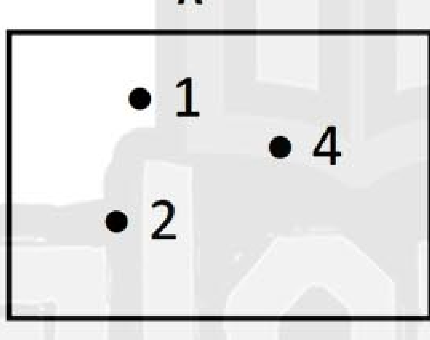
Representing sets by Venn diagram

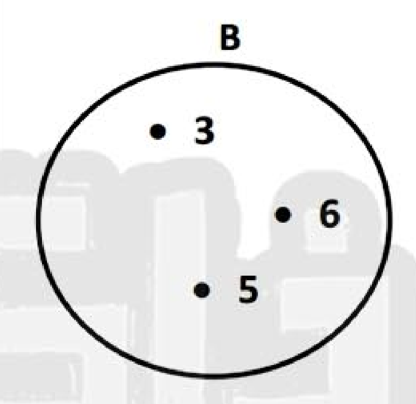
- Venn diagram is an easy way to represent the sets in any closed geometric shape.

Example:

Represent set A = {1,2,4} and set B = {3, 5, 6} usingVenn diagram.

The answer:





Represent each of the following sets using Venn diagram

X = {m, a, t, h}   and   Y = {e,n,g,l,i,s,h }



Lesson 3:Belonging of an element to a set:

- If A = {0 , 1 , 2 , 3 } , "0" is exist in set "A" so, it's called " an element of " or "belongs to" and we express it as: 0 ∈A.
- If B = { 5 , 6 , 7 } , "4" is not exist in set "B" so, it's called " not an element of " or " not belongs to" and we express it as: 4 ∉ B.
- So, the relation between an element and a set expressed by: belongs to "∈" or not belongs to "∉".

1) Put the suitable sign:(∈or∉):

a) 5 .... {5,6, 7}

b) 3 .... {1,2,3}

c) 0 ....{10}

d) m ....{m,a,t,h}

e) y .... {y,e,l,o,w}

f) 5 ....The set of prime numbers less than 12.

g) 8 .... The set of odd numbers less than 10.

h) 22 .... {0,2,22}

i) V .... {letters of word cover}

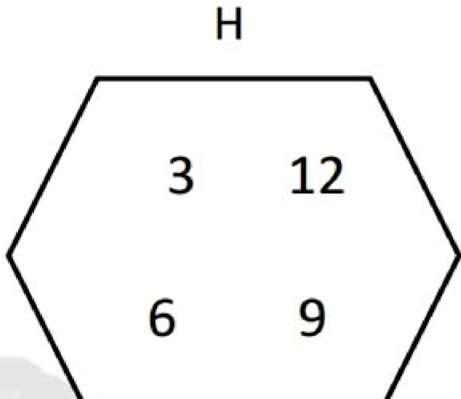
j) 51 .... {1,5}

2)***from the following Venn diagram, write by listing methods the sets, then complete with (∈ or ∉):***

G

12
14
16

H



Set G = ...

Set H = ...

a) 12 .... G

b) 12 .... H

c) 16 .... G

d) 14 .... H

e) Do you think the elements in set H represent what?

....

What is the element that is in set G and also in set H? ....

3)Complete:

a) If 3∈ {1,x,7} then x=.....................

b) If 2∉ {3,y} then y=.........................

c) If 5∈ {6,3+x} then x=.....................



Lesson 4: Types of sets

There are 3 types of sets:

1- finite set:

A set that has a limited number of elements is called finite set.

Example:

Set of prime numbers between 1 and 10. {2, 3, 5, 7}

2- Infinite set:

A set that has an unlimited number of elements is called infinite set. ***Example:***

Set of numbers: { 0 , 1 , 2 , 3 , 4 , 5 , ………… }

3- An empty set (null set):

A set that has no elements is called empty set and express it as: {} or ∅ ***Example:*** set of even numbers between 2 and 4 is empty.

Remark: the set {0} is not a null set that it has an element.

List the following sets and State its type:

a) Set of even numbers between 11 and 21.

……………………………………………………………………………………………

b) Set of prime numbers.

……………………………………………………………………………………………

c) Set of odd numbers between 3 and 5.

……………………………………………………………………………………………



Lesson 5:Equal sets

- The sets which have the same elements exactly are called equal sets.

Example: if A = {9, 10,8} and B ={8,10, 9} so that set A and set B are called equal sets.

Equivalent sets:

- The sets which have the same number of elements only are +called equivalent sets.

Example: if D = {3, 4, 5, 7} and C = {1, 3, 5, 9} so that set D and set E are called equivalent sets.

Lesson 6: Inclusion and subsets

- We express the relation between set and another set by (⊂,⊄)

Ex. 1: A = {1, 2} and set B = {1, 2, 3}, all the elements of A are included in B, so that we can say "A is a subset of B" or" A is included in B" and it is dented by "A⊂B"

Ex.2: If x={1,2} , Y={2,3,4,5} Is X⊂Y ?

1∈X while 1∉Y Therefore X is not a subset of Y because all of the elements in X are not included in Y and it is denoted by "X⊄Y "

Important Notes:

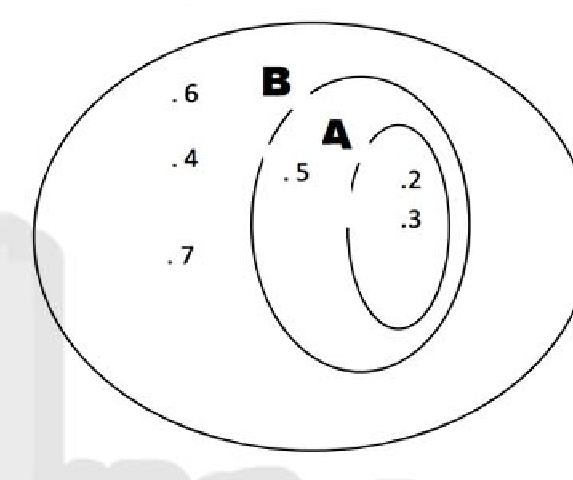
1) The empty set Ø is a subset of any set.



2) Any set is a subset of itself

1)From the opposite figure , Complete by using ⊂ or ⊄:

a) A ……… C b) A ……… B
c) C ……… B d) B ……… C
e) B ……… A f) C …….. A



2) Put the suitable symbol ∈, ∉ , ⊂ or ⊄ :

a) {3} ……………………… {1 , 2 , 3}

b) 3 ……………………… {1 , 2 , 3}

c) {33} ……………………… {1 , 2 , 3}

d) 33 ……………………… {1 , 2 , 3}

e) {7 , 9} ……………………… {9 , 7}

f) {0} ……………………… {40}

g) ……………………… { }

h) ……………………… {98}

i) ……………………… {0}

j) {b , o} ……………………… {book}



k) {rose} ……………………… The set of flowers

l) {1 , 3 , 5} ……………………… The set of odd numbers

m) {2 , 3 , 4} ……………………… The set of even numbers

n) 16 ……………………… The set of multiples of 2

o) 7 ……………………… The set of digits of the number 478

Important Notes:

* The Symbols ∈ , ∉ are used to connect an element to a set.
* The Symbols ⊂, ⊄ are used to connect two sets.

3) write all the subsets of X={1,2,3}

Lesson7: Intersection of two sets

The set of all common elements in the sets X and y is called the intersection of X and Y , and it is denoted by " X ∩ Y "

Notes:

1) X ∩ Y=Y ∩ X , it is called (The commutative property)



2) If there are no common elements in X and Y so, we say X and Y are two disjoint sets , then $X \cap Y = \emptyset$

Ex 1: Complete

a) $\{1,3\} \cap \{3,4\}$ =.......... b) $\{1,2,4\} \cap \{2,4,6\}$ =..................

c) $\{2,5,8\} \cap \{4,25,35\}$ =.............

Ex 2: If X={1,2,3} , Y={2,3,5,6} and Z={1,2,5}

Represent each of X,Y,Z using a Venn diagram

Lesson8: Union of two sets

The set of all elements in X or Y is called the union of X and Y , and it is denoted by " $X \cup Y$ "

Ex: Complete

a) $\{1\} \cup \{5\}$=......... b) $\{2,5\} \cup \{2,7\}$

c) $\{2,4,6\} \cup \emptyset$ =................

Lesson9: The Universal set

The universal set U is the mother set which includes all the given subsets.

Ex: By using a Venn diagram , Represent



U= {0,1,2,3,..............,9}

X= {1,2,,3,7}   Y= {2,4,5,7,8}

Then complete the following:

a) X   Y =..

b) X   Y =..

c) **U**   X =..

d) **U**   Y =..

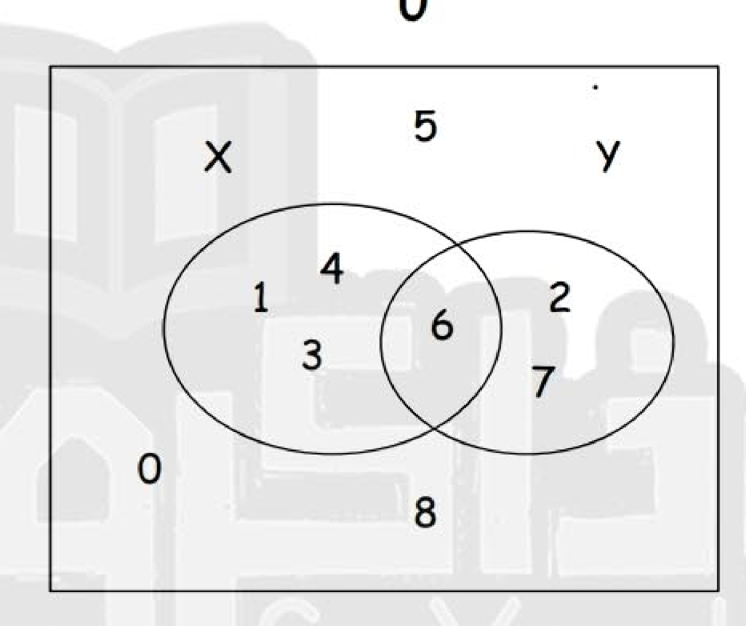


Lesson10: The complement of a set

The complement of the set A is a set of the elements in U that does not belong to the set A.

If U = {1,2,3,4,5,6} and A ={2,3,5} then the complement of the set A = {1,4,6} and it is denoted by A'

Ex:



U =..

X =..

Y =..

X' =..

Y' =..

U' =..

X   Y =..



X   Y =..

(X   Y)' =...

(X   Y)' =...

Lesson11: The Difference of two sets

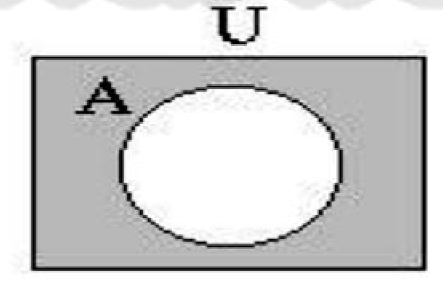
The set of elements that belongs to X and does not belong to Y is called (X difference Y) and it is denoted by X – Y

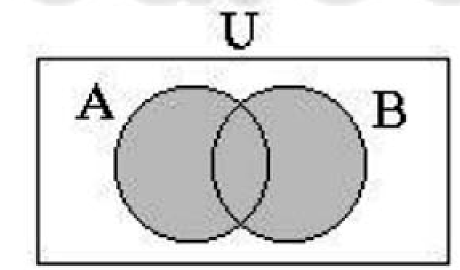
Notes: **1)** X – Y ≠ Y – X

2) X – X =

3) X - ∅ = X

1) Write the set represented by the shaded part in each of the following Venn diagrams:





....

U

A B

U

A B

....

B

A

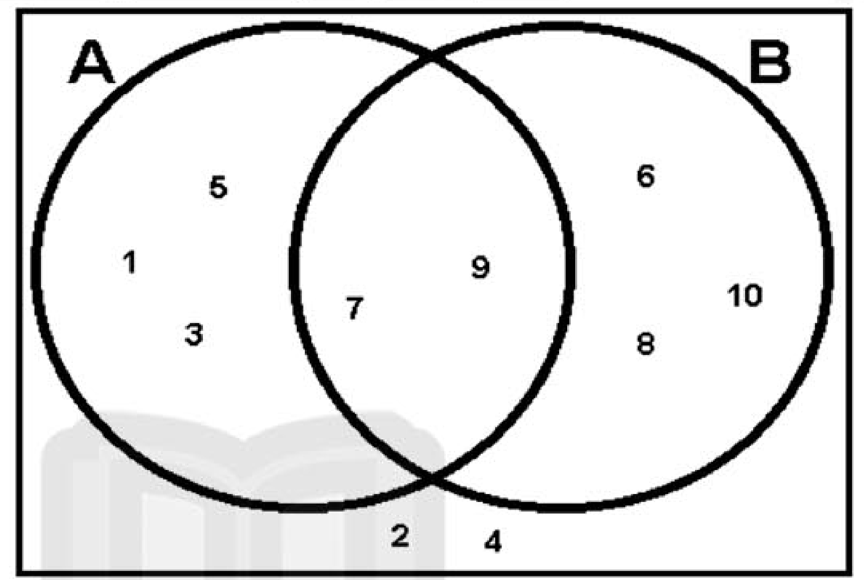
U

A B

....



2) **From the following Venn diagram, complete:**



a) A = ……………………………………………………

b) B = ……………………………………………………

c) U = ……………………………………………………

d) A′ = ……………………………………………………

e) B′ = ……………………………………………………

f) A ∩ B = ……………………………………………………

g) A ∪ B = ……………………………………………………

h) (A ∩ B)′ = ……………………………………………………

I) (A ∪ B)′ = ……………………………………………………

j) A – B = ……………………………………………………

k) B – A = ……………………………………………………

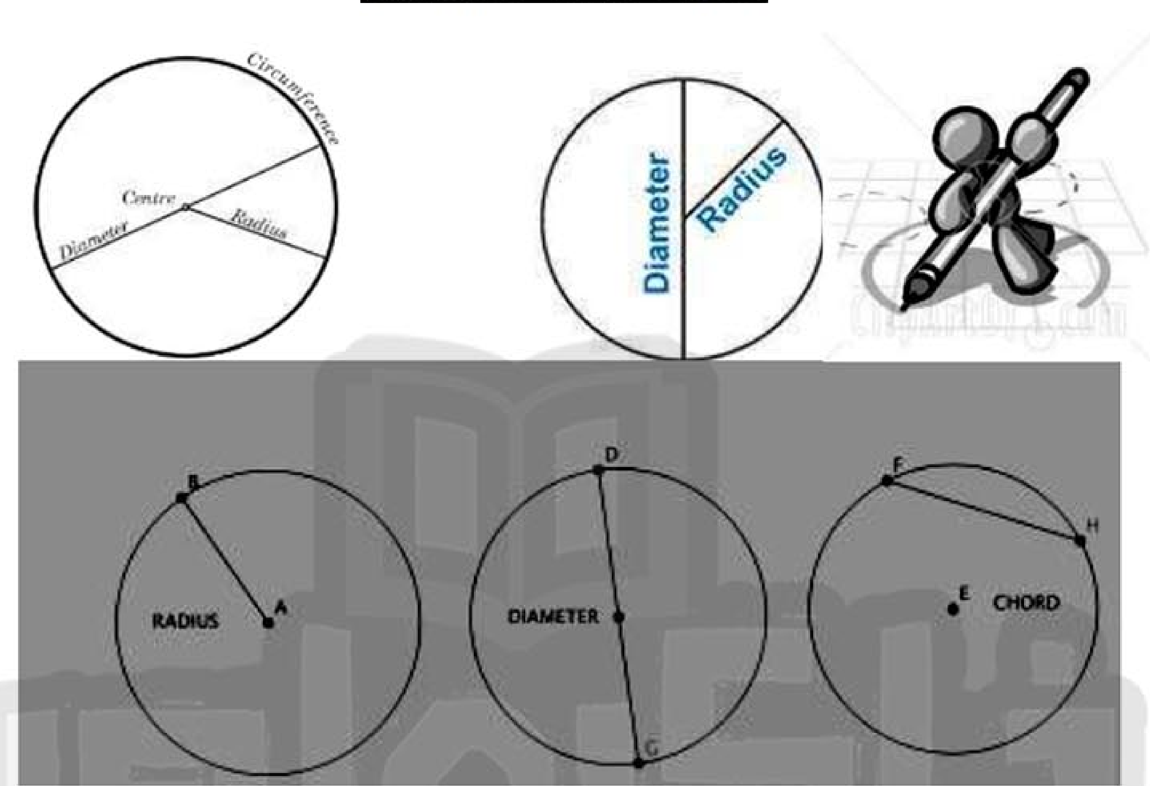
L) (A – B)′ = ……………………………………………………

m) U – A = ……………………………………………………

End of Unit 2


AlKarma Language School

Unit 3
Lesson 1 :The Circle



Study hard:

* **The circle**: is a closed curve , all the points on it having the same distance from the center.

* **The Center:** is the fixed point in the middle of the circle.

* **The chord:** is a line segment joining between two points on the circle, and doesn't pass through the center.

***The radius:** is a line segment joining between the center of the circle and any point on it.

* All Radii of a circle are equal in length.

* **The Diameter:** is the longest chord in the circle, it is a chord passing through the center.

* The length of the diameter = 2 x the length of the radius.

* All Diameters of a circle are equal in length.

AlKarma Language School

1) Complete:

a) The diameter of the circle whose radius 5 cm = ………………………… cm

a) The ………………………… is the longest chord in the circle.

b) All ………………………… & all ………………………… of the circle are equal in length.

c) The radius of the circle whose diameter 14 cm = ………………………… cm

d) The diameter is a chord passing through …………………………

e) The chord is ……………………………………………………

f) If the radius of a circle = 12 cm , then the length of the longest chord = ………………………… cm

g) Diameter = 2 x …………………………

2) From the opposite figure , complete:

a) ………………………… is the center of the circle

b) $\overline{AB}$ is a ………………………… of the circle M

c) $\overline{DE}$ is a ………………………… of the circle M

d) $\overline{CM}$ is a ………………………… of the circle M

e) The length of AB = ………………………… cm

f) The length of MC = ………………………… cm

g) The length of MB = ………………………… cm

h) $\overline{\dots\dots}$, $\overline{\dots\dots}$, $\overline{\dots\dots}$ are radii in the circle M

i) $\overline{\dots\dots}$ is a chord on the circle M

j) $\overline{\dots\dots}$ is the longest chord in the circle M

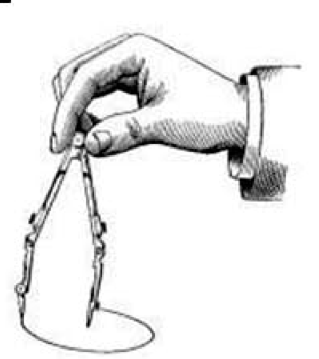
k) The length of the longest chord = ………………………… cm



AlKarma Language School

How to draw a Circle

1) Draw the circle M of radius 3 cm



2) Draw the circle N of radius 2.5 cm

3) Draw the circle P of diameter 7 cm

4) Draw the circle M with diameter $\overline{AB}$ of length 8 cm , Draw the chord $\overline{AC}$, join $\overline{CB}$ and write the type of triangle ABC according to sides , angles.


AlKarma Language School

5) Draw the circle M of radius 3 cm , draw the diameter $\overline{AB}$ and the chord $\overline{AC}$ of length 4 cm , join $\overline{MC}$ and find its length , write the type of the triangle AMC.

Lesson 2:Drawing a triangle given the lengths of its sides

Example 1

Draw the equilateral triangle ABC in which the length of every side is 4cm.

Solution:

1. Draw the line segment $\overline{AB}$ of length 4cm.
2. Adjust the compasses to a distance equal to 4cm, then place the sharp point at A and draw an arc.
3. Using the same distance, place the compasses at B, then draw another arc that intersects the first arc at C.
4. Draw $\overline{AC}$, $\overline{BC}$ So, you will have the equilateral triangle ABC.


AlKarma Language School

Example 2

Draw the equilateral △ LMN whose perimeter 15 cm.

Example 3

Draw the isosceles △ ABC in which BC = 5 cm and AB = AC = 4 cm .

1


AlKarma Language School

Example 4

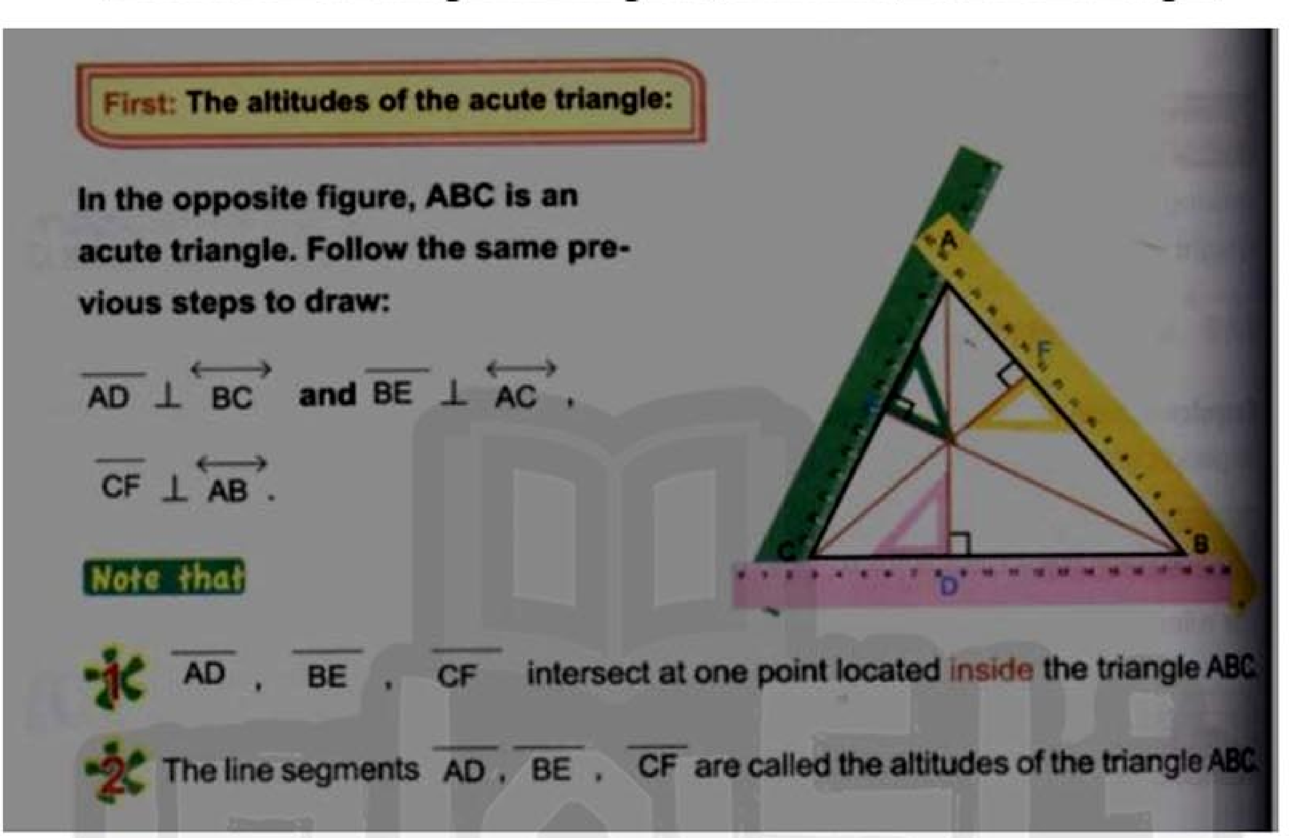
Draw ⊔ ABC in which AB = 3 cm , BC = 4 cm and AC = 5 cm then find the type of ⊔ according to its sides and its angles ?

Example 5

Draw the ⊔ ABC where AB = 6 cm , BC = 8 cm and AC = 10 cm then draw a circle M whose diameter is AC .Then find the type of ⊔ MBC according to its sides?


AlKarma Language School

Lesson 3: Drawing the heights(altitudes) of the triangle


First: The altitudes of the acute triangle:

In the opposite figure, ABC is an acute triangle. Follow the same previous steps to draw:

$\overline{AD} \perp \overleftrightarrow{BC}$ and $\overline{BE} \perp \overleftrightarrow{AC}$, $\overline{CF} \perp \overleftrightarrow{AB}$.

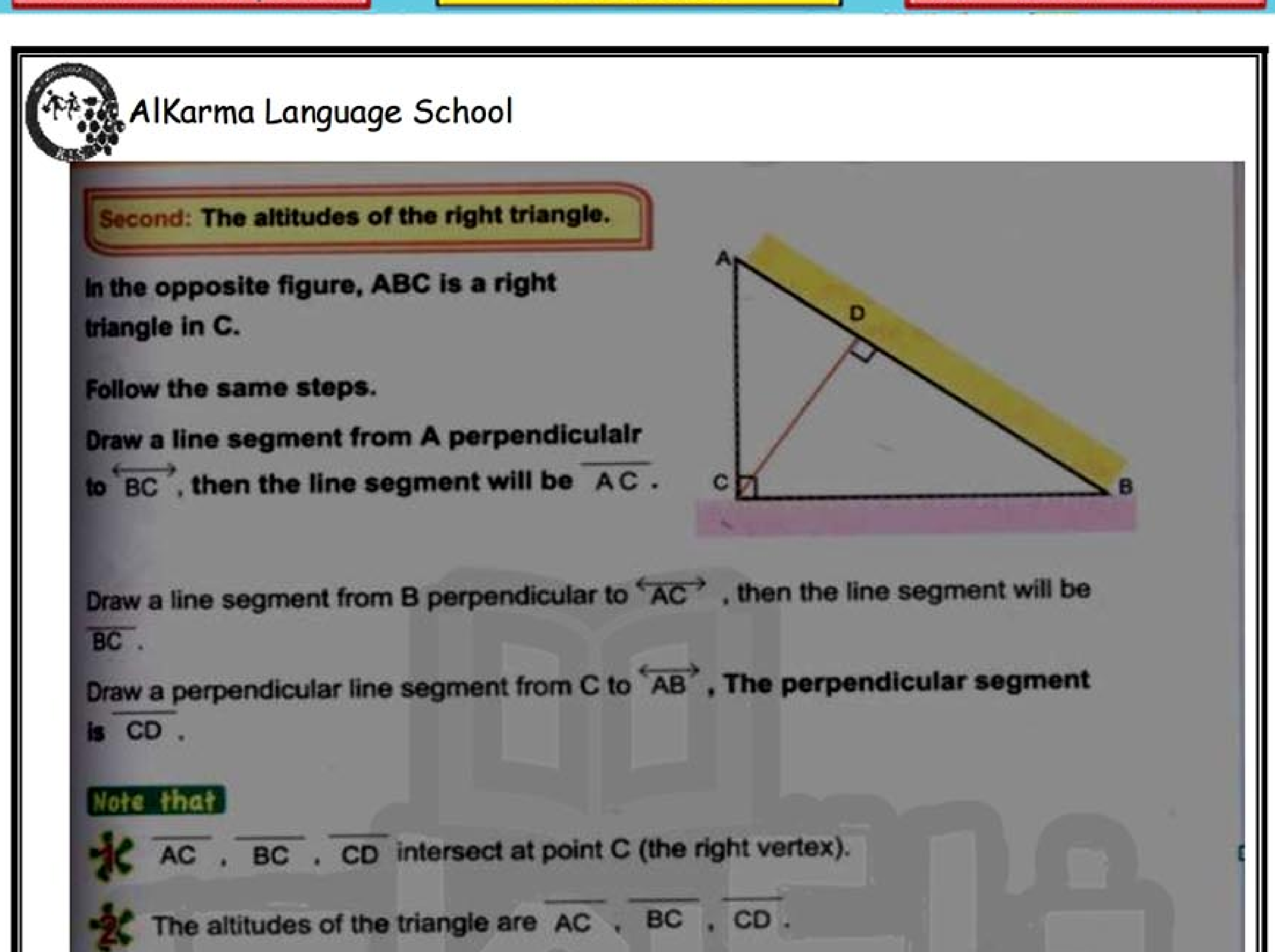
Note that

1. $\overline{AD}$, $\overline{BE}$, $\overline{CF}$ intersect at one point located inside the triangle ABC.
2. The line segments $\overline{AD}$, $\overline{BE}$, $\overline{CF}$ are called the altitudes of the triangle ABC.

Example 1

Draw △ ABC in which AB = 4 cm , BC = 5 cm and AC = 6 cm then draw the altitudes of △ .

AlKarma Language School


Second: The altitudes of the right triangle.

In the opposite figure, ABC is a right triangle in C.

Follow the same steps.

Draw a line segment from A perpendicualr to $\overleftrightarrow{BC}$, then the line segment will be $\overline{AC}$.

Draw a line segment from B perpendicular to $\overleftrightarrow{AC}$, then the line segment will be $\overline{BC}$.

Draw a perpendicular line segment from C to $\overleftrightarrow{AB}$, **The perpendicular segment is** $\overline{CD}$.

Note that

1. $\overline{AC}$, $\overline{BC}$, $\overline{CD}$ intersect at point C (the right vertex).
2. The altitudes of the triangle are $\overline{AC}$, $\overline{BC}$, $\overline{CD}$.

Example 2

Draw ⌴ ABC in which AB = 6 cm ,BC = 6 cm, m (∠) =60 , then measure the altitudes of ⌴ .



AlKarma Language School



Third: The altitudes of the obtuse triangle:

In the opposite figure, ABC is a triangle whose angle C is obtuse . Follow the same previous steps:

Draw $\overline{AD} \perp \overleftrightarrow{BC}$.

and similarly $\overline{BE} \perp \overleftrightarrow{AC}$,

$\overline{CF} \perp \overleftrightarrow{AB}$

Note that

- The altitudes of the triangle are the segments: $\overline{AD}$, $\overline{BE}$, $\overline{CF}$.
- $\overleftrightarrow{AD}$, $\overleftrightarrow{BE}$, $\overleftrightarrow{CF}$ intersect at one point which is located outside the triangle ABC.

Example 3

Draw △ XYZ in which XY = 3cm , YZ = 5 cm and ZX = 7 cm. Determine the type of triangle according to its angles ,draw the perpendicular line segment from X to $\overline{YZ}$ and measure its length .

Good Luck

Unit 4: Probability

Lesson1: Experimental probability

Exercise: The following table shows the result of a survey has been applied to know the views of 100 pupils about the favorite game to them:

a) If one pupil is chosen at random, answer the following questions:

The game	football	handball	Basket ball
No. of views	50	40	10

1) What is the probability that one of them prefers football.
2) What is the probability that one of them prefers handball.
3) What is the probability that one of them prefers basketball.

b) If there are 300 pupils, what is the expected value of the number of pupils who prefer football?

c) If there are 1000 pupils, what is the expected value of the number of pupils who prefer basketball?

Lesson 2: Theoretical Probability

The probability is the number of outcomes of an event to the number of all possible outcomes.

---

2) A box contains 4 white balls, 3 blue balls and 5 red balls, all of which are of equal size. When one ball is drawn randomly from the box find the probability of :

a) Blue ball. c) not red.

b) red ball. d) red or blue.

---

3) A car has been randomly drawn out of 10 cards numbered from 1 to 10.
Find the probability of getting:

A) An odd number B) A prime number

c) An even number greater than 6.